Author Index

Adams M A 81-87
Amstutz H C 167-174
Anderson D D 65-68
Ash H E 11-16,95-108

Barker T M 17-26
Bragdon C R 157-167
Brummitt K 187-190,191-195
Buckley M A 241-247

Campbell P 167-174
Carus D A 241-247
Clift S E 267-272
Corden J 273-287
Crisp S 233-239

David T 273-287
Doorn P 167-174
Dorey F 167-174
Dowson D 209-216
Drabu K J 191-195
Driel W D van - *see* van Driel W D
Dumbleton J H 141-155

Edmonds M E 121-125
Edwards P D 51-63
Ekström M 249-258
English R G 51-63

Fisher J 3-10,89-93,109-119,267-272,273-287
Forster H 109-119

Garbutt G 81-87
Goodfellow J W 217-222

Hailey J L 3-10
Hall R M 197-207
Han S 127-129
Hansson T 249-258
Hardaker C S 187-190,191-195
Holm S 249-258
Hult E 249-258

Ingham E 3-10
Isaac G H 209-216
Ison K 121-125

Jasty M 157-167
Jin Z M 89-93
Johnson G R 241-247
Joyce T J 11-16,297-300

Kaigle A 249-258
Kelly I G 17-26
Kelly P A 27-37,39-49
Kolar M J 65-68
Kuiper J-H 131-136

Lord M 121-125
Lowenstein J D 157-167
Lu T-W 71-79

McClure G 89-93
McCullagh P J J 191-195
McMillan D W 81-87
McNally D S 81-87
Medige J 127-129
Mehdian M 289-296
Miller M C 65-68
Mills N J 259-266
Mottershead J E 51-63

Nicol A C 17-26

O'Connor D O 157-167
O'Connor J J 27-37,39-49,71-79,217-222

Paul J P 17-26
Pitei D L 121-125
Prendergast P J 131-136

Rahnejat H 289-296
Rieker C 223-232
Rostedt M 249-258
Rubash H E 65-68

Saikko V O 175-185
Schon R 223-232
Semlitsch M 223-232
Shelley F J 65-68
Siney P 197-207
Smith R A 191-195
Stark C 141-155
Stone M 3-10
Streicher R M 223-232
Syniuta W D 157-167

Tighe B J 89-93

Unsworth A 11-16,95-108,197-207,297-300

van Driel W D 131-136

Wang A 141-155
Weber H 223-232
Whelan M P 51-63
Wroblewski B M 3-10,197-207,209-216

Yardley A 241-247

Ziv I 127-129

© IMechE 1996

Subject Index

Acetabular cups, Charnley 209-216
Acetabular socket wear, Charnley 197-207
Active Implantable Medical Device Directive 233-239
Alloys, cobalt 223-232
Alloys, cobalt-chromium 191-195
Alloys, titanium 191-195
Alpharabola leaflet geometry 267-272
Angular motion, shoulder joint 17-26
Anisotropy, microstructural 127-129
Articular cartilage 27-37,39-49
Articular cartilage friction 109-119
Articulation, metal-on-metal 223-232
Artificial heart valves, polyurethane trileaflet 273-287

Bartel knee model 51-63
Bearings, cushion 89-93
Biomechanics, hip protectors 259-266
Biphasic poroelasticity 131-136
Blood flow, incompressible 289-296
Blood flow measurement 289-296
Bone longitudinal fracture, cortical 127-129
Burger's fluid model 249-258

Carbon filled polymer sensors, high 289-296
Cartilage, articular 27-37,39-49
Cartilage friction, articular 109-119
Cartilage tensile stress 27-37,39-49
Cartilage-metal contacts 109-119
CE marking 233-239
Charnley acetabular cups 209-216
Charnley acetabular socket wear 197-207
Chromium-cobalt - *see* Cobalt-chromium
Climbing stairs 65-68
Cobalt alloys 223-232
Cobalt-chromium alloys 191-195
Computational fluid dynamics 289-296
Computer simulation 71-79
Contact constraints, Gauss point 51-63
Contacts, cartilage-metal 109-119
Cortical bone longitudinal fracture 127-129
Counterface roughness 3-10
Creep 209-216
Creep behaviour 249-258
Cross-linked polyethylene wear 11-16,297-300
Cups, Charnley acetabular 209-216
Cushion bearings 89-93
Cycle loading 249-258

Daily living activities 241-247
Degradation 209-216
Design, polyurethane leaflet heart valve 267-272
Design, surface replacement prosthesis 95-108
Directive, Active Implantable Medical Device 233-239
Directive, *In Vitro* Diagnostic Medical Device 233-239
Directive, Medical Device 233-239
Disc, invertebral 249-258
Disc stress distributions, intervertebral 81-87
Doppler velocimetry, laser 273-287
Dynamics, computational fluid 289-296
Dynamics, upper limb 241-247

Elastohydrodynamic lubrication 89-93
Electrogoniometers 17-26

Fibre recruitment 71-79
Film thickness 89-93
Finger prostheses 11-16
Finite element analysis 51-63,131-136,267-272
Flow, haemodynamic 273-287
Fluid model, Burger's 249-258
Force, striker 259-266
Force-sensitive resistors 121-125
Fracture, longitudinal, cortical bone 127-129
Friction, articular cartilage 109-119

Gauss point contact constraints 51-63
Grafts, vascular 289-296

Haemodynamic flow 273-287
Heart valve design, polyurethane leaflet 267-272
High-density polyethylene wear 217-222
High-carbon filled polymer sensors 289-296
Hip joint loading 65-68
Hip joint simulator, three-axis 175-185
Hip protector biomechanics 259-266
Hip replacement wear, total 157-167,167-174,175-185 187-190,191-195,223-232
Hip replacements 3-10,89-93
Hip simulator, ten station 187-190
Hydrogel, permeable 89-93

Implants 233-239
In Vitro Diagnostic Medical Device Directive 233-239
Incompressible blood flow 289-296
Insoles, plantar pressure measurement 121-125
Interphalangeal joints, proximal 95-108
Intervertebral disc stress distributions 81-87
Invertebral disc 249-258

Joint angular motion, shoulder 17-26
Joint loading, hip 65-68
Joint replacement wear, total 141-155
Joints, proximal interphalangeal 95-108

Kinematics 241-247
Knee ligament shape changes 71-79
Knee model, Bartel 51-63
Knee replacement, meniscal 217-222
Knee replacement, total 51-63

Laser Doppler velocimetry 273-287
Leaflet geometry, alpharabola 267-272
Ligament shape changes, knee 71-79
Limb co-ordination, upper 17-26

© IMechE 1996

Limb dynamics, upper 241-247
Load transmission 27-37,39-49
Loading, cycle 249-258
Loading, hip joint 65-68
Loading time 109-119
Longitudinal fracture, cortical bone 127-129
Lubrication 109-119
Lubrication, elastohydrodynamic 89-93

Medical Device Directive 233-239
Meniscal knee replacement 217-222
Metal-cartilage contacts 109-119
Metal-on-metal articulation 223-232
Microstructural anisotropy 127-129
Model, Bartel knee 51-63
Model, Burger's fluid 249-258
Model, solid 249-258
Motion, multidirectional 157-167
Multidirectional motion 157-167

Non-permeable polyurethane 89-93

Osteoarthritis 27-37,39-49
Osteolysis, wear-induced 223-232

Penetration rates 209-216
Permeable hydrogel 89-93
Plantar pressure measurement insoles 121-125
Polyethylene inserts 51-63
Polyethylene, ultra-high molecular weight 3-10,141-155
157-167,167-174,187-190,197-204
Polyethylene wear, cross-linked 11-16,297-300
Polyethylene wear debris 3-10
Polyethylene wear, high-density 217-222
Polyethylene wear, ultra-high molecular weight 297-300
Polymer sensors, high-carbon filled 289-296
Polyurethane leaflet heart valve design 267-272
Polyurethane, non-permeable 89-93
Polyurethane trileaflet artificial heart valves 273-287
Poroelasticity, biphasic 131-136
Post-market surveillance 233-239
Pressure measurement, plantar insoles 121-125
Profilometry, stress 81-87
Prostheses, finger 11-16
Prosthesis design, surface replacement 95-108
Protector, Sahva 259-266
Protectors, hip, biomechanics 259-266
Proximal interphalangeal joints 95-108

Replacement, meniscal knee 217-222
Replacement prosthesis design, surface 95-108
Replacement wear, total hip....157-167,167-174,175-185
187-190,191-195,223-232
Replacement wear, total joint 141-155
Replacements, hip 89-93
Resistors, force-sensitive 121-125
Reynolds normal stress 273-287
Rigid substrate 89-93
Ringer's solution 109-119

Sagittal plane 71-79
Sahva protector 259-266
Shape changes, knee ligament 71-79
Shoulder joint angular motion 17-26
Simulation, computer 71-79
Simulator, ten station hip 187-190
Simulator, three-axis hip joint 175-185
Socket wear, Charnley acetabular 197-207
Solid model 249-258
Stair climbing 65-68
Stress, tensile in cartilage 27-37,39-49
Stress analysis 267-272
Stress distribution, intervertebral disc 81-87
Stress intensity factors 39-49
Stress profilometry 81-87
Striker force 259-266
Substrate, rigid 89-93
Surface replacement prosthesis design 95-108
Synovial fluid 109-119

Ten station hip simulator 187-190
Tensile stress in cartilage 27-37,39-49
Three-axis hip joint simulator 175-185
Time-dependent behaviour 121-125
Titanium alloys 191-195
Total hip replacement wear 157-167,167-174,175-185
187-190,191-195,223-232
Total joint replacement wear 141-155
Total knee replacement 51-63
Transmission, load 27-37,39-49
Trileaflet artificial heart valves, polyurethane 273-287

UHMWPE - *see* Ultra-high molecular weight polyethylene
Ultra-high molecular weight polyethylene 3-10,141-155
157-167,167-174,187-190,197-207
Ultra-high molecular weight polyethylene wear 297-300
Ultrasound velocity 127-129
Upper limb co-ordination 17-26
Upper limb dynamics 241-247

Valves, polyurethane trileaflet artificial heart 273-287
Vascular grafts 289-296
Velocimetry, Laser Doppler 273-287
Velocity, ultrasound 127-129
Vibrocreep 249-258
Viscoelastic response 249-258

Wear 209-216
Wear, Charnley acetabular socket 197-207
Wear, cross-linked polyethylene 11-16,297-300
Wear debris, polyethylene 3-10
Wear, high-density polyethylene 217-222
Wear, total hip replacement 157-167,167-174,175-185
187-190,191-195,223-232
Wear, total joint replacement 141-155
Wear, ultra-high molecular weight polyethylene 297-300
Wear-induced osteolysis 223-232

XLPE - *see* Cross-linked polyethylene

© IMechE 1996